

Appl No. 10/014,853
Reply to Office Action of November 13, 2003

REMARKS

Claims 1-16 have been canceled. New Claims 18-35 remain active in the case.
Reconsideration is respectfully requested.

The present invention relates to a method of processing synthetic zeolites.

Specification Amendments

The specification has been amended at pages 9 and 11 in order to present the more conventional description of an alkaline earth metal as an alkaline earth metal. Entry of the amendments into the record is respectfully requested.

Claim Objection

The objection to Claims 4-10 and 16 is obviated by the cancellation of these claims in favor of the new claims.

Claim Amendments

Original Claims 1-16 have been canceled in favor of new Claims 17-34 wherein new Claims 17-24 correspond to original Claims 3-10. Support for new Claim 25 is found on page 8 and basis for Claims 26 and 27 can be found in original Claims 11 and 12 respectively. Support for new Claims 28 and 29 are found in original Claim 13 while support for new Claims 30 and 31 can be found in original Claim 14. Finally, support for new Claims 32 and 33 can be found in original Claim 15 and support for new Claims 34 and 35 can be found in original Claim 16.

As to the matter of the composition of the suspension obtained upon hydrothermal treatment, in the production of the silico aluminate zeolite material, silicates and amorphous silico aluminates are produced. Further, the use of an organic template is exemplified in Example 1 and mention of the organic template is found on pages 10 and 12 of the specification. Finally, in the event an alkylaluminate and/or alkylsilicate is employed as the alumina and silica precursors as disclosed on page 8, line 2 of the specification, then alcohols are obtained upon hydrolysis of the alumina and silica precursors. Accordingly, support for the amending language in new Claim 17 is found as indicated above. The fact that the mother liquor is alkaline is supported by Example 1 of the text of the application. Accordingly, entry of the new claims into the record is respectfully requested.

Invention

The present invention as now claimed is directed to a method of recovering zeolite crystals from a mother liquor by

(a) preparing an aqueous alkaline mother liquor containing alumina and silica precursors and optionally an organic templating agent;

(b) hydrothermally treating said mother liquor thereby obtaining a suspension containing zeolite crystals, silicates or amorphous silica aluminate and optionally (i) organic templating agent and product generated by decomposition of the organic templating agent and optionally (ii) alcohol derived by the decomposition of said silica and alumina precursors;

(c) treating the alkaline zeolite crystal containing suspension with an acid until the suspension attains a pH ranging from 3-8; and

(d) filtering or decanting the resulting mixture to isolate the zeolite crystals.

Prior Art Rejection 35 USC 102(a)

Claims 1-3 stand rejected based on 35 USC 102(a) as anticipated by DE 100 59 520. This ground of rejection is respectfully traversed.

As is clear from the discussion on pages 3 and 4 of the text of the cited German reference, the objective of the reference is to provide a simple and reversible method in which to enlarge the equivalent particle diameters of zeolites and aqueous fluids so that the separation of the zeolite particles is facilitated or accelerated without permanently changing their chemical composition or crystalline structure. The objective has been achieved by a method as stated in Claim 1 of the patent which is that before separation of zeolite crystals, water-soluble salt or matters that release constituents of a salt in the liquid are added to the suspension and that the suspension is adjusted to a pH value of no more than 6.5 so that the zeolite crystals agglomerate to larger solid particles. On the other hand, in view of the invention as now claimed, it is not apparent from the text of the '520 reference that it is possible to carry out the recovery of zeolite crystals from an aqueous suspension containing them in the presence of the additional materials in the suspension as required by new Claim 17. That is, these additional materials, besides the zeolite crystals, are silicates or amorphous silicoaluminates, organic template molecules and/or products generated by the decomposition of the organic template, and alcohols which arise from the hydrolysis of such silica and alumina precursors as tetraalkylsilicates and tetraalkyl aluminates. On the other hand, the apparent clear teaching of the reference at page 5, lines 3-8 is that an advantage of the process of the reference is that the salt of the zeolite crystals can be

removed without leaving residues by converting such residual material into volatile compounds as it is desirable to remove extraneous materials from the zeolite material that is ultimately separated so that the obtained zeolite can be processed to form catalysts. The finding of the present invention is that by the procedure of the present invention, it is possible to obtain zeolites having additional materials without altering the activity of the zeolite from a pure zeolite.

The method of the present invention has the additional advantage of quantitatively using silica, alumina and/or other metal oxides in the preparation of a reactant mixture. It does not appear that the reference suggests an improved method of recovering zeolite crystals while being in the presence of a precursor of a ligand or a precursor which is able to generate both acid and ligand.

In light of the comments above, it is believed that the outstanding anticipatory ground of rejection has been obviated and withdrawal of the same is respectfully requested.

Claims 11-15 stand rejected based on 35 USC 103(a) as unpatentable over DE 100 59 520, further in view of Wu et al patent. This ground of rejection is respectfully traversed.

Applicants traverse the rejection of the rejection of the indicated claims in view of the '520 disclosure for the same reasons advanced above.

The Wu et al reference does not provide any disclosure which overcomes or improves upon the deficiencies of the '520 reference and thereof, withdrawal of the rejection of Claims 11-15 is respectfully requested.

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It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "FO Oblon", written over a horizontal line.

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